AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

1-41. (Cancelled)

42. (Currently amended) A process for the production of a flexible unbonded offshore pipe ~~having~~ comprising at least one polymer layer with a thickness of about 4 mm, said method comprising shaping said polymer layer from a polymer material by extrusion in an extrusion station and cross-linking said extruded polymer material, said polymer material ~~including~~ comprising a polyethylene and a peroxide for providing the cross-linking of the polymer material, said peroxide having an activation temperature substantially above [[a]]the temperature of the polymer material during the extrusion thereof, said cross-linking of said extruded polymer material ~~being carried out by exposing the extruded polymer material to electromagnetic waves selected from the group consisting of~~ is activated by application of infrared radiation ~~and microwave radiation~~, the infrared radiation comprising wavelengths corresponding to the absorption peaks for the polymer material.

43. (Previously presented) The process according to claim 42, wherein said peroxide has an activation temperature at least 10°C above the temperature of the polymer material during the extrusion thereof.

44. (Previously presented) The process according to claim 42, wherein said polymer material is shaped by extrusion onto a supporting unit in the extrusion station.

45. (Previously presented) The process according to claim 42, wherein said polymer material is shaped by extrusion into a supporting unit in the extrusion station.

46. (Currently amended) The process according to claim 42, wherein said extruded polymer material is exposed to ~~electromagnetic waves~~ the infrared radiation for a sufficient time to thereby raise the temperature of the extruded polymer material at least to the activation temperature of the peroxide.

47. (Currently amended) The process according to claim 42, wherein the extrusion and cross-linking are carried out in an in-line process, including passing the extruded polymer material from

the extruder through a cross-linking zone to activate said peroxide to thereby cross-link the polymer material, and wherein said activation is performed by applying ~~electromagnetic waves~~ the infrared radiation in the cross-linking zone.

48. (Currently amended) The process according to claim 42, wherein the extrusion and cross-linking are carried out in an in-line process, including passing the extruded polymer material from the extruder through a cross-linking zone to activate said peroxide to thereby cross-link the polymer material, and wherein said activation is performed by applying ~~electromagnetic waves~~ the infrared radiation in the cross-linking zone, said polymer material being passed from the extruder to the cross-linking zone with less than 10°C average intermediate cooling.

49. (Previously presented) The process according to claim 42, wherein said polymer material is shaped by extrusion onto a supporting unit in the extrusion station, and wherein the supporting unit is a reinforcement layer of the flexible unbonded offshore pipe.

50. (Previously presented) The process according to claim 42, wherein said polymer material is shaped by extrusion onto a supporting unit in the extrusion station, and wherein the supporting unit is in the form of a carcass, said polymer layer being an inner liner of the flexible unbonded offshore pipe and said polymer material being extruded onto the carcass.

Claim 51 (Withdrawn): A process according to claim 42, wherein the supporting unit is in the form of a pressure armour, said polymer layer being an intermediate layer of the flexible unbonded offshore pipe and said polymer material being extruded onto the pressure armour.

Claim 52 (Withdrawn): A process according to claim 42, wherein the supporting unit is in the form of a tensile armour, said polymer material being extruded onto the tensile armour.

53. (Previously presented) The process according to claim 42, wherein the polymer layer is an inner liner of the flexible unbonded offshore pipe.

Claim 54 (Withdrawn): A process according to claim 53, wherein said inner liner being extruded into a supporting unit, said supporting unit being in the form of a calibrating device which calibrates the outer dimension of the pipe using vacuum onto a supporting surface.

55. (Previously presented) The process according to claim 42, wherein the polyethylene has a density of at least 920 g/cm^3.

56. (Previously presented) The process according to claim 42, wherein the polyethylene has a density of at least 940 g/cm^3.

57. (Previously presented) The process according to claim 42, wherein the polyethylene has a density of at least 945 g/cm^3.

58. (Previously presented) The process according to claim 42, wherein the polyethylene has a density of at least 955 g/cm^3.

59. (Currently amended) The process according to claim 42, wherein the polymer material ~~includes~~ comprises at least 50% by weight of polyethylene.

60. (Currently amended) The process according to claim 42, wherein the polymer material ~~includes~~ comprises at least 85% by weight of polyethylene.

61. (Currently amended) The process according to claim 42, wherein the polymer material ~~includes~~ comprises up to about 10% by weight of fillers.

62. (Previously presented) The process according to claim 61, wherein the fillers are selected from the group consisting of pigments, heat stabilisers, process stabilisers, metal deactivators, flame retardants and reinforcement fillers.

63. (Currently amended) The process according to claim 42, wherein the polymer material ~~includes~~ comprises up to about 40% by weight of additional polymers other than polyethylene.

64. (Previously presented) The process according to claim 63, wherein said additional polymers are thermoplastics.

65. (Previously presented) The process according to claim 42, wherein the amount of peroxide in the polymer material is at least 0.1% by weight of the polymer material.

66. (Previously presented) The process according to claim 42, wherein the amount of peroxide in the polymer material is between 0.2 and 3% by weight of the polymer material.

67. (Currently amended) The process according to claim 42, wherein the polymer material ~~includes~~ comprises peroxide from 0.1 to 1.0% by weight.

68. (Currently amended) The process according to claim 42, wherein the polymer material ~~includes~~ comprises peroxide from 0.3 to 0.8% by weight.

69. (Previously presented) The process according to claim 42, wherein the peroxide has an activation temperature above 145°C.

70. (Previously presented) The process according to claim 69, wherein the peroxide is selected from the group consisting of butylcumyl peroxide, dicumyl peroxide, Trigonox 145B,

hydroperoxide, 2,5-dimethyl hexane 2,5-di-t-butyl peroxide, bis(t-butylperoxy isopropyl) benzene, t-butyl cumyl peroxide, di-t-butyl peroxide, 2,5-dimethyl hexine-3 2,5-di-t-butyl peroxide and butylhydroperoxide.

71-75. (Cancelled)

76. (Currently amended) The process according to claim [[74]]42, wherein at least 50% of the energy applied by the infrared radiation is applied in the form of infrared radiation with wavelengths in the range 0.5-10 μm.

77. (Currently amended) The process according to claim [[74]]42, wherein at least 50% of the energy applied by the infrared radiation is applied in the form of infrared radiation with wavelengths in the range 1.0-5.0 μm.

78. (Cancelled)

79. (Currently amended) The process according to claim [[78]]42, wherein the maximum intensity of the infrared radiation is in the range 0.5-10 μm.

80. (Currently amended) The process according to claim [[78]]42, wherein the maximum intensity of the infrared radiation is in the range 1.0-7.0 μm.

81. (Currently amended) The process according to claim [[78]]42, wherein the maximum intensity of the infrared radiation is in the range 3.0-7.0 μm.

82. (Previously presented) The process according to claim 42, wherein the pressure in the cross-linking zone is raised to avoid formation of bubbles and irregularities.

83. (Previously presented) The process according to claim 81, wherein the pressure in the cross-linking zone is raised above 2 bars.

84. (Currently amended) The process according to claim 42, wherein the extruded material is exposed to the treatment with ~~electromagnetic waves~~ the infrared radiation in said cross-linking zone for up to about 600 seconds.

85. (Currently amended) The process according to claim 42, wherein the extruded material is exposed to the treatment with ~~electromagnetic waves~~ the infrared radiation in said cross-linking zone for 5 to 120 seconds.

86. (Currently amended) The process according to claim 42, wherein the extruded polymer material is subjected to a treatment with the infrared radiation in said cross-linking zone, the temperature of the polymer material being raised to above 145°C.

87. (Currently amended) The process according to claim 42, wherein the extruded polymer material is subjected to a treatment with the infrared radiation in said cross-linking zone, the temperature of the polymer material being raised to between 150 and 200°C.

88. (Previously presented) The process according to claim 42, wherein the degree of cross-linking obtained is 75 to 90%.

89. (Previously presented) The process according to claim 42, wherein the degree of cross-linking obtained is 80 to 85%.

90. (Previously presented) The process according to claim 42, wherein the extruded polymer material enters the cross-linking zone immediately after extrusion.

91. (Previously presented) The process according to claim 42, wherein the extruded polymer material enters the cross-linking zone no later than 2 minutes after extrusion.

92. (Previously presented) The process according to claim 42, wherein the extruded and cross-linked polymer material is cooled to ambient temperatures.

93. (Previously presented) The process according to claim 42, wherein said polymer material is shaped by extrusion onto a supporting unit in the extrusion station, and wherein the supporting unit is a metallic material.

94. (Currently amended) The process according to claim 93, wherein the supporting unit is in the form of a reinforcing layer of the flexible unbonded offshore pipe, said metallic material reflecting at least part of the ~~electromagnetic waves~~ infrared radiation applied in the cross-linking zone.

Claim 95 (Withdrawn): A process according to claim 42, wherein the supporting unit is an armour layer of the flexible unbonded offshore pipe, said armour layer comprising a secondary layer in the form of a tape applied onto the armour, the polymer composition being extruded onto said tape.

Claim 96 (Withdrawn): A process according to claim 42, wherein the supporting unit is an armour layer of the flexible unbonded offshore pipe, said armour layer comprising a secondary layer in the form of a gas permeation barrier applied onto the armour, the polymer composition being extruded onto said tape.

Claim 97 (Withdrawn): A process according to claim 96, wherein said gas permeation barrier is impermeable to liquid and gas.

Claim 98 (Withdrawn): A process according to claim 95, wherein said secondary layer has a reflective surface reflecting the electromagnetic waves applied in the cross-linking zone.

Claim 99 (Withdrawn): The process according to claim 98, wherein said reflective surface of the secondary layer being capable of

reflecting at least 50% of the not adsorbed electromagnetic waves.

100. (Previously presented) The process according to claim 42, wherein a velocity of the extrusion of the polymer material is approximately equal to a velocity of the extruded polymer passing through the cross-linking zone.

101. (Previously presented) The process according to claim 42, wherein the polymer layer is an inner liner of the offshore pipe.

102. (Previously presented) The process according to claim 42, wherein the polymer layer is an inner liner of the offshore pipe, said inner liner having a thickness of 8 mm or more.

103. (Previously presented) The process according to claim 42, wherein the polymer layer is an inner liner of the offshore pipe, said inner liner having a thickness of 12 mm or more.

104. (Previously presented) The process according to claim 42, wherein the polymer layer is an inner liner of the offshore pipe, said inner liner having a thickness of 16 mm or more.

105. (Previously presented) The process according to claim 42, wherein the polymer layer is an inner liner of the offshore pipe, said inner liner having a thickness of 18 mm or more.

106. (Cancelled)

107. (Previously presented) A method for the production of a flexible unbonded offshore pipe, said method comprising the steps of

i) providing a carcass

ii) applying a gas permeation barrier layer onto the carcass,

iii) applying an inner liner in the form of a polymer layer using the process as defined in claim 42, wherein the polymer material is applied onto a supporting unit comprising said carcass and said liner, and

iv) applying one or more reinforcing layers onto the inner liner.

Claim 108 (Withdrawn): The method for the production of a flexible unbonded offshore pipe, said method comprising the steps of

i) providing an inner liner in the form of a polymer layer using the process as defined in claim 42, wherein the polymer material is applied into a supporting unit,

ii) applying a gas permeation barrier layer onto the inner liner

iii) applying one or more reinforcing layers onto the inner layer.

Claim 109 (Withdrawn): A method according to claim 107, wherein the gas permeation barrier layer is a wound or folded layer of a foil, such as a metal foil, the foil preferably being wound or folded with overlapping edges.

110. (Previously presented) The method according to claim 107, wherein the gas permeation barrier layer is an extruded polymer layer.

111. (Previously presented) The method according to claim 107, wherein said gas permeation barrier layer is sufficiently

impermeable to gas to prevent a gas selected from the group consisting of methane, hydrogen sulphides, and carbon dioxides at a pressure of 5 bars from diffusing through the layer to another side thereof with a pressure of 1 bar.

Claim 112 (Withdrawn): A flexible unbonded offshore pipe comprising at least one polymer layer, said polymer layer being obtained using the process as defined in claim 42.

Claim 113 (Withdrawn): A flexible unbonded offshore pipe comprising an inner liner obtained using the process as defined in claim 42.

Claim 114 (Withdrawn): A flexible unbonded offshore pipe comprising an outer cover obtainable using the process as defined in claim 42.

Claim 115 (Withdrawn): A flexible unbonded offshore pipe comprising an intermediate polymer layer obtained using the process as defined in claim 42.

Claim 116 (Withdrawn): A flexible unbonded offshore pipe obtained by the method as defined in claim 42.

117. (Currently amended) The process according to claim 42, wherein the extrusion and cross-linking are carried out in an in-line process, including passing the extruded polymer material from the extruder through a cross-linking zone to activate said peroxide to thereby cross-link the polymer material, and wherein said activation is performed by applying ~~electromagnetic waves~~ the infrared radiation in the cross-linking zone, said polymer material being passed from the extruder to the cross-linking zone with less than 25°C average intermediate cooling.